

SEQUENCE LISTING

EV 170 405 209 US
2976-4039US3

<110> KEITH, TIM

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OBESITY

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<141> 2000-04-13

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<210> 3
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<212> DNA
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Leu Leu Leu Leu Leu Leu Trp Pro Val Pro Gly Ala Gly Val Leu Gln
20 25 30

ggt gag gac gcg ggc ggg gtc ccc ctc acc ctg tgc tct gtc ttt act 144
Gly Glu Asp Ala Gly Gly Val Pro Leu Thr Leu Cys Ser Val Phe Thr
35 40 45

cca gga cat atc cct ggg cag cca gtc acc ccg cac tgg gtc ctg gat 192
Pro Gly His Ile Pro Gly Gln Pro Val Thr Pro His Trp Val Leu Asp
50 55 60

gga caa ccc tgg cgc acc gtc agc ctg gag gag ccg gtc tcg aag cca 240
Gly Gln Pro Trp Arg Thr Val Ser Leu Glu Glu Pro Val Ser Lys Pro
65 70 75 80

gac atg ggg ctg gtg gcc ctg gag gct gaa ggc cag gag ctc ctg ctt 288
Asp Met Gly Leu Val Ala Leu Glu Ala Glu Gly Gln Glu Leu Leu Leu
85 90 95

gag ctg gag aag aac cac agg ctg ctg gcc cca gga tac ata gaa acc 336
Glu Leu Glu Lys Asn His Arg Leu Leu Ala Pro Gly Tyr Ile Glu Thr
100 105 110

cac tac ggc cca gat ggg cag cca gtg gtg ctg gcc ccc aac cac acg 384
His Tyr Gly Pro Asp Gly Gln Pro Val Val Leu Ala Pro Asn His Thr
115 120 125

gat cat tgc cac tac caa ggg cga gta agg ggc ttc ccc gac tcc tgg 432
Asp His Cys His Tyr Gln Gly Arg Val Arg Gly Phe Pro Asp Ser Trp
130 135 140

gta gtc ctc tgc acc tgc tct ggg atg agt ggc ctg atc acc ctc agc 480
Val Val Leu Cys Thr Cys Ser Gly Met Ser Gly Leu Ile Thr Leu Ser
145 150 155 160

agg aat gcc agc tat tat ctg cgt ccc tgg cca ccc cgg ggc tcc aag 528
Arg Asn Ala Ser Tyr Tyr Leu Arg Pro Trp Pro Pro Arg Gly Ser Lys

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Asp	Phe	Ser	Thr	His	Glu	Ile	Phe	Arg	Met	Glu	Gln	Leu	Leu	Thr	Trp																																																			
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aaa	gga	acc	tgt	ggc	cac	agg	gat	cct	ggg	aac	aaa	gcg	ggc	atg	acc	624																																																		
Lys	Gly	Thr	Cys	Gly	His	Arg	Asp	Pro	Gly	Asn	Lys	Ala	Gly	Met	Thr																																																			
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Ser	Leu	Pro	Gly	Gly	Pro	Gln	Ser	Arg	Gly	Arg	Arg	Glu	Ala	Arg	Arg																																																			
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Thr	Arg	Lys	Tyr	Leu	Glu	Leu	Tyr	Ile	Val	Ala	Asp	His	Thr	Leu	Phe																																																			
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ttg	act	cgg	cac	cga	aac	ttg	aac	cac	acc	aaa	cag	cgt	ctc	ctg	gaa	768																																																		
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gtc	gcc	aac	tac	gtg	gac	cag	ctt	ctc	agg	act	ctg	gac	att	cag	gtg	816																																																		
Val	Ala	Asn	Tyr	Val	Asp	Gln	Leu	Leu	Arg	Thr	Leu	Asp	Ile	Gln	Val																																																			
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gcg	ctg	acc	ggc	ctg	gag	gtg	tgg	acc	gag	cgg	gac	cgc	agc	cgc	gtc	864																																																		
Ala	Leu	Thr	Gly	Leu	Glu	Val	Trp	Thr	Glu	Arg	Asp	Arg	Ser	Arg	Val																																																			
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acg	cag	gac	gcc	aac	gcc	acg	ctc	tgg	gcc	ttc	ctg	cag	tgg	cgc	cgg	912																																																		
Thr	Gln	Asp	Ala	Asn	Ala	Thr	Leu	Trp	Ala	Phe	Leu	Gln	Trp	Arg	Arg																																																			
			290			295			300																																																									
ggg	ctg	tgg	gcg	cag	cgg	ccc	cac	gac	tcc	gcg	cag	ctg	ctc	acg	ggc	960																																																		
Gly	Leu	Trp	Ala	Gln	Arg	Pro	His	Asp	Ser	Ala	Gln	Leu	Leu	Thr	Gly																																																			
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cgc	gcc	ttc	cag	ggc	gcc	aca	gtg	ggc	ctg	gcg	ccc	gtc	gag	ggc	atg	1008																																																		
Arg	Ala	Phe	Gln	Gly	Ala	Thr	Val	Gly	Leu	Ala	Pro	Val	Glu	Gly	Met																																																			
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tgc	cgc	gcc	gag	agc	tgc	gga	ggc	gtg	agc	acg	gac	cac	tgc	gag	ctc	1056																																																		
Cys	Arg	Ala	Glu	Ser	Ser	Gly	Gly	Val	Ser	Thr	Asp	His	Ser	Glu	Leu																																																			
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Pro	Ile	Gly	Ala	Ala	Ala	Thr	Met	Ala	His	Glu	Ile	Gly	His	Ser	Leu																																																			
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ggc	ctc	agc	cac	gac	ccc	gac	ggc	tgc	tgc	gtg	gag	gct	gcg	gcc	gag	1152																																																		
Gly	Leu	Ser	His	Asp	Pro	Asp	Gly	Cys	Cys	Val	Glu	Ala	Ala	Ala	Glu																																																			
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gac tgc ggc cct ggc cag gag tgc cgc gac ctc tgc tgc ttt gct cac Asp Cys Gly Pro Gly Gln Glu Cys Arg Asp Leu Cys Cys Phe Ala His 450 455 460	1392
aac tgc tcg ctg cgc ccg ggg gcc cag tgc gcc cac ggg gac tgc tgc Asn Cys Ser Leu Arg Pro Gly Ala Gln Cys Ala His Gly Asp Cys Cys 465 470 475 480	1440
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gag ggc cac ttc ctg ccc tgt gca ggg agg gat gcc ctg tgt ggg aag Glu Gly His Phe Leu Pro Cys Ala Gly Arg Asp Ala Leu Cys Gly Lys 580 585 590	1776
ctg cag tgc cag ggt gga aag ccc agc ctg ctc gca ccg cac atg gtg Leu Gln Cys Gln Gly Gly Lys Pro Ser Leu Leu Ala Pro His Met Val 595 600 605	1824
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gga gcc ttg gca ctc ccc agt gcc cag ctg gac ctg ctt ggc ctg ggc Gly Ala Leu Ala Leu Pro Ser Ala Gln Leu Asp Leu Leu Gly Leu Gly 625 630 635 640	1920
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Arg Arg Cys	Arg Lys Asn Ala Phe	Gln Glu Leu Gln Arg Cys Leu Thr	
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gcc tgc cac	agc cac ggg gtt tgc	aat agc aac cat aac tgc cac tgt	2064
Ala Cys His	Ser His Gly Val Cys	Asn Ser Asn His Asn Cys His Cys	
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gct cca ggc	tgg gct cca ccc ttc	tgt gac aag cca ggc ttt ggt ggc	2112
Ala Pro Gly	Trp Ala Pro Pro Phe	Cys Asp Lys Pro Gly Phe Gly Gly	
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agc atg gac	agt ggc cct gtg cag	gct gaa aac cat gac acc ttc ctg	2160
Ser Met Asp	Ser Gly Pro Val Gln	Ala Glu Asn His Asp Thr Phe Leu	
705	710	715 720	
ctg gcc atg	ctc ctc agc gtc ctg	ctg cct ctg ctc cca ggg gcc ggc	2208
Leu Ala Met	Leu Leu Ser Val Leu	Leu Leu Pro Gly Ala Gly	
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ctg gcc tgg	tgt tgc tac cga ctc	cca gga gcc cat ctg cag cga tgc	2256
Leu Ala Trp	Cys Cys Tyr Arg Leu	Pro Gly Ala His Leu Gln Arg Cys	
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Ser Trp Gly	Cys Arg Arg Asp Pro	Ala Cys Ser Gly Pro Lys Asp Gly	
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cca cac agg	gac cac ccc ctg ggc	ggc gtt cac ccc atg gag ttg ggc	2352
Pro His Arg	Asp His Pro Leu Gly	Gly Val His Pro Met Glu Leu Gly	
770	775	780	
ccc aca gcc	act gga cag ccc tgg	ccc ctg gcc cca ggg tct cct gct	2400
Pro Thr Ala	Thr Gly Gln Pro Trp	Pro Leu Ala Pro Gly Ser Pro Ala	
785	790	795 800	
gac cat att	cac aac att tac cct	cca cca ttt ctc cca gac cct gag	2448
Asp His Ile	His Asn Ile Tyr Pro	Pro Pro Phe Leu Pro Asp Pro Glu	
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aac tct cat	gag ccc agc agc cac	cct gag aag cct ctg cca gca gtc	2496
Asn Ser His	Glu Pro Ser Ser His	Pro Glu Lys Pro Leu Pro Ala Val	
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tgc cct gac	ccc caa gca gat caa	gtc cag atg cca aga tcc tgc ctc	2544
Ser Pro Asp	Pro Gln Ala Asp Gln	Val Gln Met Pro Arg Ser Cys Leu	
835	840	845	
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Trp			
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Gly His Ile Pro Gly Gln Pro Val Thr Pro His Trp Val Leu Asp Gly
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Gln Pro Trp Arg Thr Val Ser Leu Glu Glu Pro Val Ser Lys Pro Asp
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Met Gly Leu Val Ala Leu Glu Ala Glu Gly Gln Glu Leu Leu Leu Glu
65 70 75 80
Leu Glu Lys Asn His Arg Leu Leu Ala Pro Gly Tyr Ile Glu Thr His
85 90 95
Tyr Gly Pro Asp Gly Gln Pro Val Val Leu Ala Pro Asn His Thr Asp
100 105 110
His Cys His Tyr Gln Gly Arg Val Arg Gly Phe Pro Asp Ser Trp Val
115 120 125
Val Leu Cys Thr Cys Ser Gly Met Ser Gly Leu Ile Thr Leu Ser Arg
130 135 140
Asn Ala Ser Tyr Tyr Leu Arg Pro Trp Pro Pro Arg Gly Ser Lys Asp
145 150 155 160

Phe	Ser	Thr	His	Glu	Ile	Phe	Arg	Met	Glu	Gln	Leu	Leu	Thr	Trp	Lys	165	170	175
Gly	Thr	Cys	Gly	His	Arg	Asp	Pro	Gly	Asn	Lys	Ala	Gly	Met	Thr	Ser	180	185	190
Leu	Pro	Gly	Gly	Pro	Gln	Ser	Arg	Gly	Arg	Arg	Glu	Ala	Arg	Arg	Thr	195	200	205
Arg	Lys	Tyr	Leu	Glu	Leu	Tyr	Ile	Val	Ala	Asp	His	Thr	Leu	Phe	Leu	210	215	220
Thr	Arg	His	Arg	Asn	Leu	Asn	His	Thr	Lys	Gln	Arg	Leu	Leu	Glu	Val	225	230	235
Ala	Asn	Tyr	Val	Asp	Gln	Leu	Leu	Arg	Thr	Leu	Asp	Ile	Gln	Val	Ala	245	250	255
Leu	Thr	Gly	Leu	Glu	Val	Trp	Thr	Glu	Arg	Asp	Arg	Ser	Arg	Val	Thr	260	265	270
Gln	Asp	Ala	Asn	Ala	Thr	Leu	Trp	Ala	Phe	Leu	Gln	Trp	Arg	Arg	Gly	275	280	285
Leu	Trp	Ala	Gln	Arg	Pro	His	Asp	Ser	Ala	Gln	Leu	Leu	Thr	Gly	Arg	290	295	300
Ala	Phe	Gln	Gly	Ala	Thr	Val	Gly	Leu	Ala	Pro	Val	Glu	Gly	Met	Cys	305	310	315
Arg	Ala	Glu	Ser	Ser	Gly	Gly	Val	Ser	Thr	Asp	His	Ser	Glu	Leu	Pro	325	330	335
Ile	Gly	Ala	Ala	Ala	Thr	Met	Ala	His	Glu	Ile	Gly	His	Ser	Leu	Gly	340	345	350
Leu	Ser	His	Asp	Pro	Asp	Gly	Cys	Cys	Val	Glu	Ala	Ala	Ala	Glu	Ser	355	360	365
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Phe	Ser	Ala	Cys	Ser	Arg	Arg	Gln	Leu	Arg	Ala	Phe	Phe	Arg	Lys	Gly	385	390	395
Gly	Gly	Ala	Cys	Leu	Ser	Asn	Ala	Pro	Asp	Pro	Gly	Leu	Pro	Val	Pro	405	410	415
Pro	Ala	Leu	Cys	Gly	Asn	Gly	Phe	Val	Glu	Ala	Gly	Glu	Glu	Cys	Asp	420	425	430
Cys	Gly	Pro	Gly	Gln	Glu	Cys	Arg	Asp	Leu	Cys	Cys	Phe	Ala	His	Asn	435	440	445
Cys	Ser	Leu	Arg	Pro	Gly	Ala	Gln	Cys	Ala	His	Gly	Asp	Cys	Cys	Val	450	455	460
Arg	Cys	Leu	Leu	Lys	Pro	Ala	Gly	Ala	Leu	Cys	Arg	Gln	Ala	Met	Gly	465	470	475
Asp	Cys	Asp	Leu	Pro	Glu	Phe	Cys	Thr	Gly	Thr	Ser	Ser	His	Cys	Pro			

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Pro	Asp	Val	Tyr	Leu	Leu	Asp	Gly	Ser	Pro	Cys	Ala	Arg	Gly	Ser	Gly														
			500					505					510																
Tyr	Cys	Trp	Asp	Gly	Ala	Cys	Pro	Thr	Leu	Glu	Gln	Gln	Cys	Gln	Gln														
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Leu	Pro	Ser	Ala	Gln	Leu	Asp	Leu	Leu	Gly	Leu	Gly	Leu	Val	Glu	Pro														
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Lys	Asn	Ala	Phe	Gln	Glu	Leu	Gln	Arg	Cys	Leu	Thr	Ala	Cys	His	Ser														
		580						585					590																
His	Gly	Val	Cys	Asn	Ser	Asn	His	Asn	Cys	His	Cys	Ala	Pro	Gly	Trp														
		595					600					605																	
Ala	Pro	Pro	Phe	Cys	Asp	Lys	Pro	Gly	Phe	Gly	Gly	Ser	Met	Asp	Ser														
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Gly	Pro	Val	Gln	Ala	Glu	Asn	His	Asp	Thr	Phe	Leu	Leu	Ala	Met	Leu														
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Leu	Ser	Val	Leu	Leu	Pro	Leu	Leu	Pro	Gly	Ala	Gly	Leu	Ala	Trp	Cys														
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Cys	Tyr	Arg	Leu	Pro	Gly	Ala	His	Leu	Gln	Arg	Cys	Ser	Trp	Gly	Cys														
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Arg	Arg	Asp	Pro	Ala	Cys	Ser	Gly	Pro	Lys	Asp	Gly	Pro	His	Arg	Asp														
		675					680					685																	
His	Pro	Leu	Gly	Gly	Val	His	Pro	Met	Glu	Leu	Gly	Pro	Thr	Ala	Thr														
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His	Pro	Glu	Lys	Pro	Leu	Pro	Ala	Val	Ser	Pro	Asp	Pro	Gln	Ala	Asp														
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Gln	Val	Gln	Met	Pro	Arg	Ser	Cys	Leu	Trp																				
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Gln	Pro	Trp	Arg	Thr	Val	Ser	Leu	Glu	Glu	Pro	Val	Ser	Lys	Pro	Asp	
50					55					60						
Met	Gly	Leu	Val	Ala	Leu	Glu	Ala	Glu	Gly	Gln	Glu	Leu	Leu	Leu	Glu	
65					70					75					80	
Leu	Glu	Lys	Asn	His	Arg	Leu	Leu	Ala	Pro	Gly	Tyr	Ile	Glu	Thr	His	
85					90					95						
Tyr	Gly	Pro	Asp	Gly	Gln	Pro	Val	Val	Leu	Ala	Pro	Asn	His	Thr	Asp	
100					105					110						
His	Cys	His	Tyr	Gln	Gly	Arg	Val	Arg	Gly	Phe	Pro	Asp	Ser	Trp	Val	
115					120					125						
Val	Leu	Cys	Thr	Cys	Ser	Gly	Met	Ser	Gly	Leu	Ile	Thr	Leu	Ser	Arg	
130					135					140						
Asn	Ala	Ser	Tyr	Tyr	Leu	Arg	Pro	Trp	Pro	Pro	Arg	Gly	Ser	Lys	Asp	
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Phe	Ser	Thr	His	Glu	Ile	Phe	Arg	Met	Glu	Gln	Leu	Leu	Thr	Trp	Lys	
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Gly	Thr	Cys	Gly	His	Arg	Asp	Pro	Gly	Asn	Lys	Ala	Gly	Met	Thr	Ser	
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Leu	Pro	Gly	Gly	Pro	Gln	Ser	Arg	Gly	Arg	Arg	Glu	Ala	Arg	Arg	Thr	
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Arg	Lys	Tyr	Leu	Glu	Leu	Tyr	Ile	Val	Ala	Asp	His	Thr	Leu	Phe	Leu	
210					215					220						
Thr	Arg	His	Arg	Asn	Leu	Asn	His	Thr	Lys	Gln	Arg	Leu	Leu	Glu	Val	
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Ala	Asn	Tyr	Val	Asp	Gln	Leu	Leu	Arg	Thr	Leu	Asp	Ile	Gln	Val	Ala	
245					250					255						
Leu	Thr	Gly	Leu	Glu	Val	Trp	Thr	Glu	Arg	Asp	Arg	Ser	Arg	Val	Thr	
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Gln	Asp	Ala	Asn	Ala	Thr	Leu	Trp	Ala	Phe	Leu	Gln	Trp	Arg	Arg	Gly	
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Leu	Trp	Ala	Gln	Arg	Pro	His	Asp	Ser	Ala	Gln	Leu	Leu	Thr	Gly	Arg	
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Ala	Phe	Gln	Gly	Ala	Thr	Val	Gly	Leu	Ala	Pro	Val	Glu	Gly	Met	Cys	
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Arg	Ala	Glu	Ser	Ser	Gly	Gly	Val	Ser	Thr	Asp	His	Ser	Glu	Leu	Pro	
325					330					335						
Ile	Gly	Ala	Ala	Ala	Thr	Met	Ala	His	Glu	Ile	Gly	His	Ser	Leu	Gly	
340					345					350						

Leu Ser His Asp Pro Asp Gly Cys Cys Val Glu Ala Ala Ala Glu Ser
 355 360 365
 Gly Gly Cys Val Met Ala Ala Ala Thr Gly His Pro Phe Pro Arg Val
 370 375 380
 Phe Ser Ala Cys Ser Arg Arg Gln Leu Arg Ala Phe Phe Arg Lys Gly
 385 390 395 400
 Gly Gly Ala Cys Leu Ser Asn Ala Pro Asp Pro Gly Leu Pro Val Pro
 405 410 415
 Pro Ala Leu Cys Gly Asn Gly Phe Val Glu Ala Gly Glu Glu Cys Asp
 420 425 430
 Cys Gly Pro Gly Gln Glu Cys Arg Asp Leu Cys Cys Phe Ala His Asn
 435 440 445
 Cys Ser Leu Arg Pro Gly Ala Gln Cys Ala His Gly Asp Cys Cys Val
 450 455 460
 Arg Cys Leu Leu Lys Pro Ala Gly Ala Leu Cys Arg Gln Ala Met Gly
 465 470 475 480
 Asp Cys Asp Leu Pro Glu Phe Cys Thr Gly Thr Ser Ser His Cys Pro
 485 490 495
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Thr Ser Ser His Cys Pro Pro
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